H12999

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service

DESCRIPTIVE REPORT

Type of Survey:	Navigable Area
Registry Number:	H12999

LOCALITY

State(s):	Alaska
General Locality:	Kodiak Island, AK
Sub-locality:	Kalsin Bay

2017

CHIEF OF PARTY
John J. Lomnicky, CDR/NOAA

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Date:

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTRY NUMBER:

HYDROGRAPHIC TITLE SHEET

H12999

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State(s):	**Alaska**
General Locality:	**Kodiak Island, AK**
Sub-Locality:	**Kalsin Bay**
Scale:	**40000**
Dates of Survey:	**05/12/2017 to 06/30/2017**
Instructions Dated:	**03/09/2017**
Project Number:	**OPR-P136-RA-17**
Field Unit:	**NOAA Ship *Rainier***
Chief of Party:	**John J. Lomnicky, CDR/NOAA**
Soundings by:	**Multibeam Echo Sounder**
Imagery by:	**Multibeam Echo Sounder Backscatter**
Verification by:	**Atlantic Hydrographic Branch**
Soundings Acquired in:	**meters at Mean Lower Low Water**

Remarks:

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Any revisions to the Descriptive Report (DR) generated during office processing are shown in bold red italic text. The processing branch maintains the DR as a field unit product, therefore, all information and recommendations within the body of the DR are considered preliminary unless otherwise noted. The final disposition of surveyed features is represented in the OCS nautical chart update products. All pertinent records for this survey, including the DR, are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via http://www.ncei.noaa.gov/.

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Descriptive Report to Accompany Survey H12999

Project: OPR-P136-RA-17

Locality: Kodiak Island, AK

Sublocality: Kalsin Bay

Scale: 1:40000

May 2017 - June 2017

NOAA Ship *Rainier*

Chief of Party: John J. Lomnicky, CDR/NOAA

A. Area Surveyed

The survey area is referred to as "Kalsin Bay" (sheet 4) within the Project Instructions. The area encompasses approximately 17 square nautical miles extending from Broad Point to Isthmus Point and southwest to the head of Kalsin Bay.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
57° 42' 26.87" N 152° 28' 26.6" W	57° 35' 17.25" N 152° 17' 48.47" W

Table 1: Survey Limits

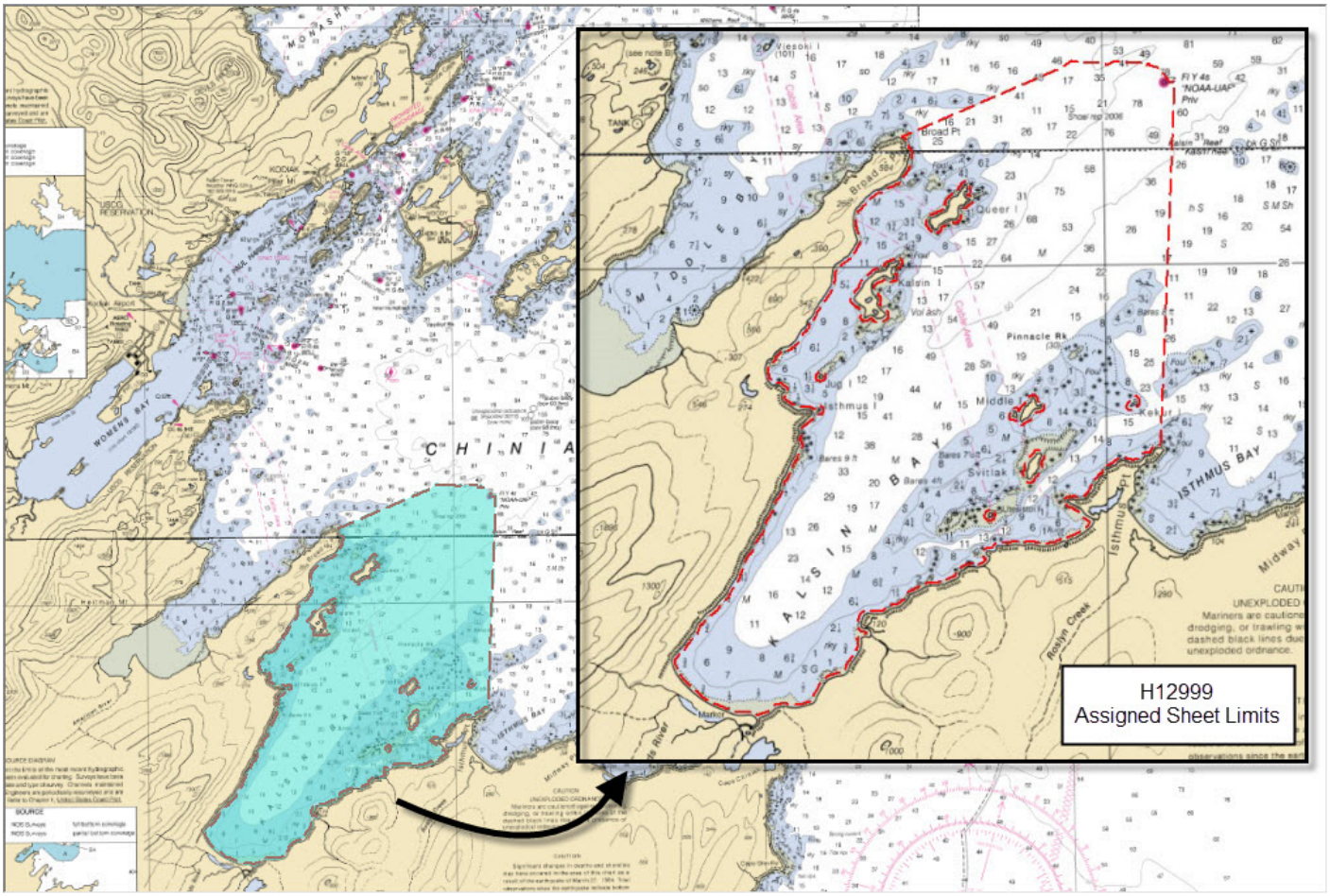


Figure 1: H12999 assigned survey area.

Data were acquired within survey limits as required in the Project Instructions and HSSD unless otherwise noted in this report.

A.2 Survey Purpose

The area of Chiniak Bay supports the second busiest and third richest fisheries port in Alaska. In 2015, the Port of Kodiak was responsible for 515 million pounds of fish and $138 million dollars of product. Chiniak Bay is the gateway to Kodiak and has a survey vintage of 1933. This area has seen many groundings and near misses due to the number of dangers to navigation and submerged pinnacles that exist in this area. The navigation of this area is further complicated by the number of vessels trying to enter and exit the Port of Kodiak via a choke point located at the channel entrance buoy. In recent years a number of groundings in and around the area have occurred, the most famous being a 174 foot long Army landing craft that was outbound to deliver goods to a remote village in western AK in 2012. This survey will serve to update the nautical charts with modern data to support safe navigation.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

Data were acquired within assigned survey limits as required in the Project Instructions and HSSD unless otherwise noted in this report.

Pydro QC Tools 2 Grid QA was used to analyze H12999 multibeam echosounder (MBES) data density. The submitted H12999 variable-resolution (VR) surface met HSSD density requirements.

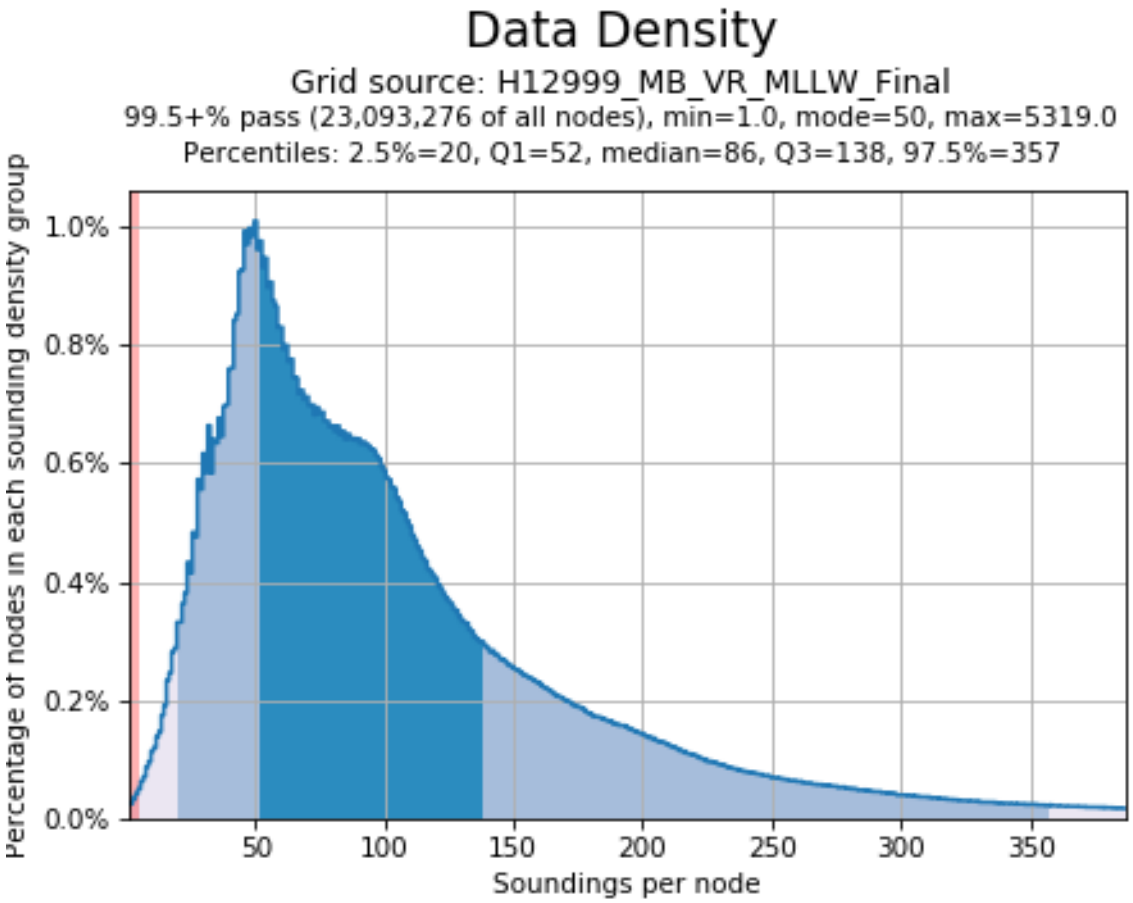


Figure 2: Pydro derived histogram plot showing HSSD density compliance of H12999 finalized variable-resolution MBES data.

A.4 Survey Coverage

The following table lists the coverage requirements for this survey as assigned in the project instructions:

Water Depth	Coverage Required
All waters in survey area except for H12997 and designated S-57 cvrage areas	Complete Coverage (refer to HSSD Section 5.2.2.3). Note All MBES acquisition requires backscatter acquistion (refer to HSSD Section 6.2)

Complete multibeam echosounder (MBES) coverage was acquired to the inshore limit of hydrography, the Navigable Area Limit Line (NALL). In areas where survey coverage did not reach the 4-meter depth contour nor the assigned sheet limits, it was due to the survey vessle reaching the inshore extent of safe navigation as shown in the figure below. These areas were generally located very near shore, were subject to dangerous wave action and other hazards.

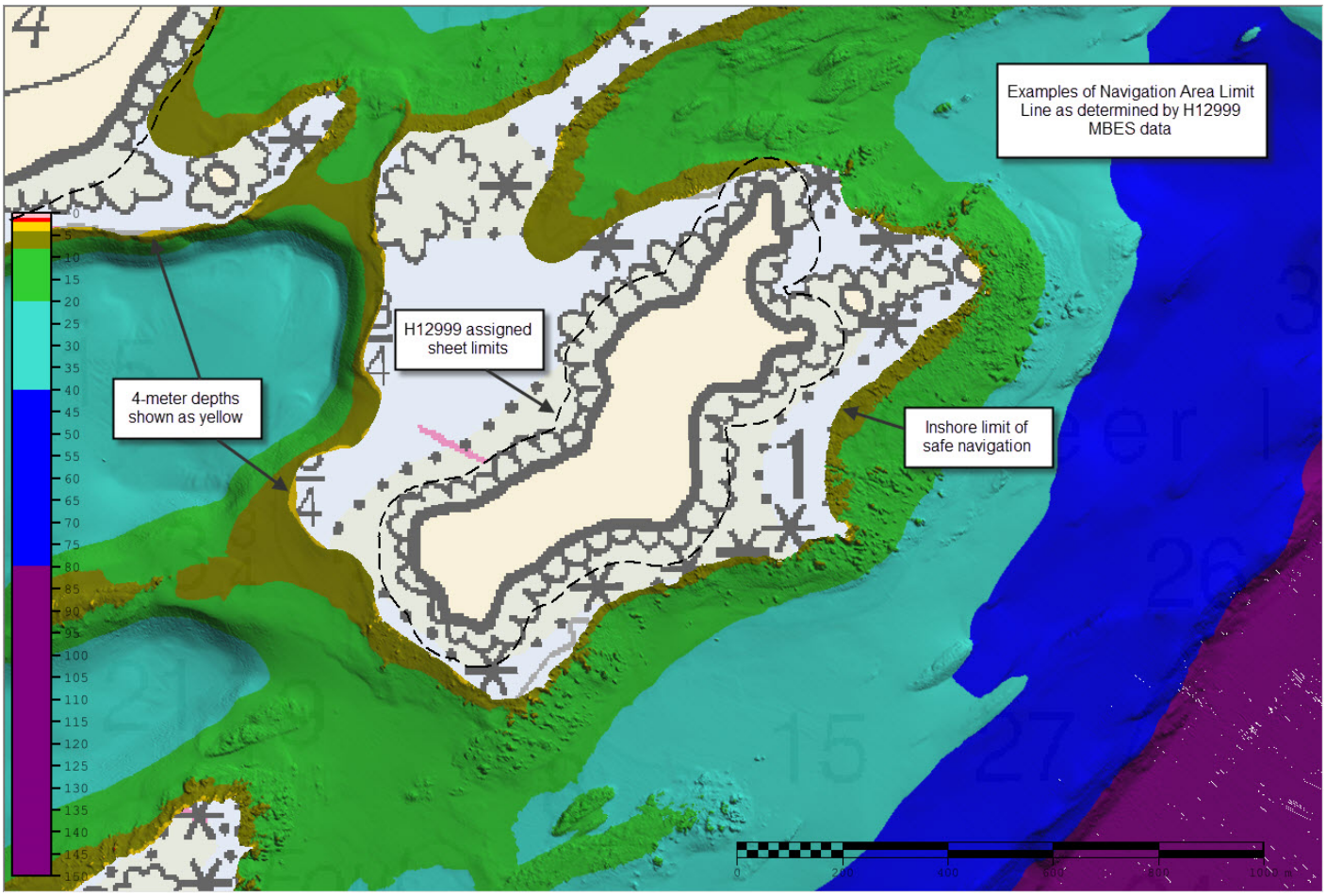


Figure 3: Examples of H12999 NALL determination.

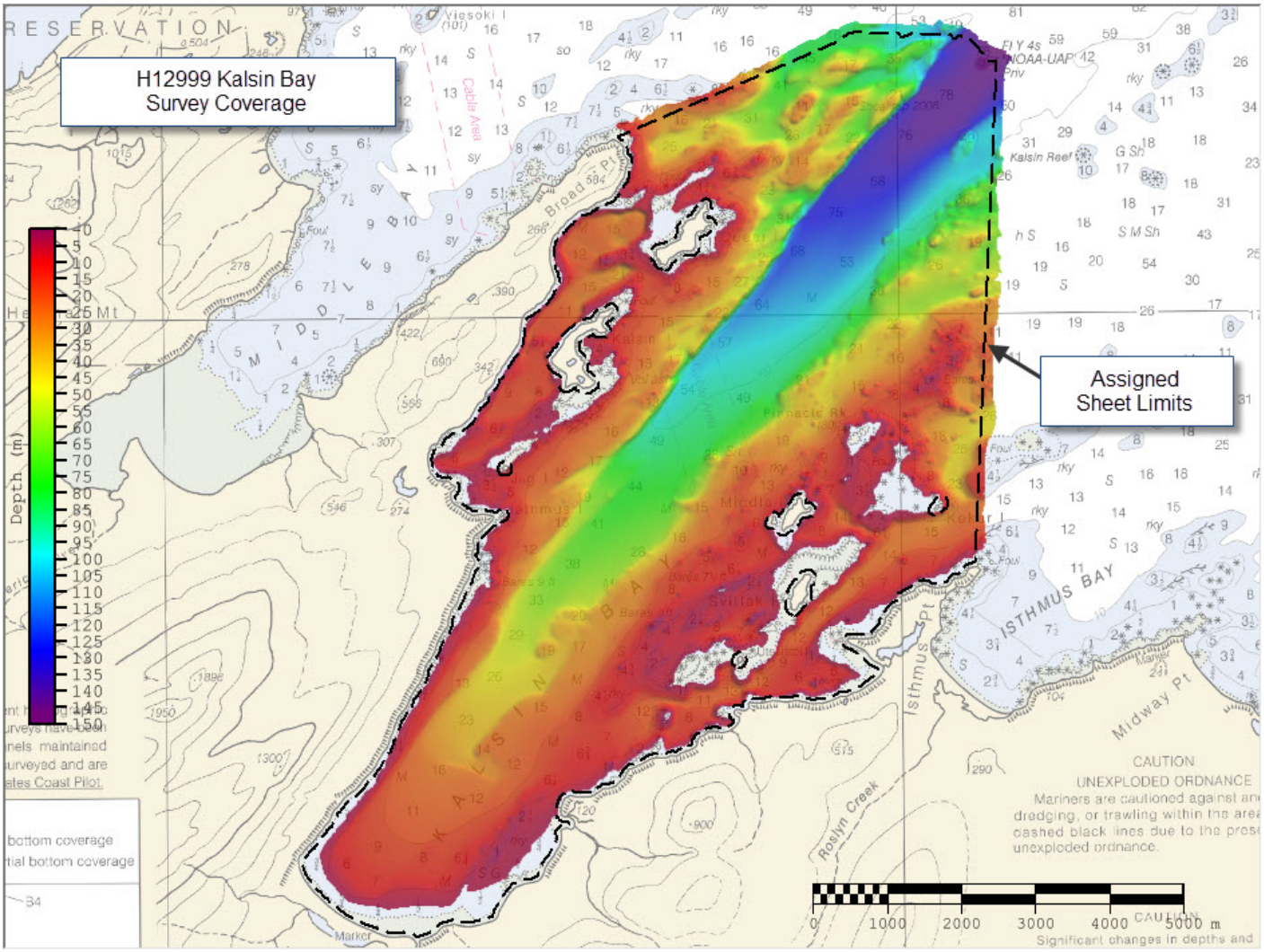


Figure 4: H12999 MBES coverage and assigned survey limits (Chart 16593).

A.5 Survey Statistics

The following table lists the mainscheme and crossline acquisition mileage for this survey:

	HULL ID	*2801*	*2802*	*2803*	*2804*	*Total*
LNM	SBES Mainscheme	0	0	0	0	0
	MBES Mainscheme	143.5	152.0	52.5	256.8	604.8
	Lidar Mainscheme	0	0	0	0	0
	SSS Mainscheme	0	0	0	0	0
	SBES/SSS Mainscheme	0	0	0	0	0
	MBES/SSS Mainscheme	0	0	0	0	0
	SBES/MBES Crosslines	0	0	20.3	3.9	24.2
	Lidar Crosslines	0	0	0	0	0
Number of Bottom Samples						6
Number Maritime Boundary Points Investigated						0
Number of DPs						155
Number of Items Investigated by Dive Ops						0
Total SNM						16.5

Table 2: Hydrographic Survey Statistics

The following table lists the specific dates of data acquisition for this survey:

Survey Dates	Day of the Year
05/12/2017	132
05/13/2017	133

Survey Dates	Day of the Year
05/14/2017	134
05/15/2017	135
05/16/2017	136
05/25/2017	145
05/26/2017	146
05/28/2017	148
05/29/2017	149
05/30/2017	150
05/31/2017	151
06/01/2017	152
06/10/2017	161
06/11/2017	162
06/13/2017	164
06/20/2017	171
06/22/2017	173
06/23/2017	174
06/26/2017	177
06/27/2017	178
06/30/2017	181

Table 3: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR are discussed in the following sections.

B.1.1 Vessels

The following vessels were used for data acquisition during this survey:

Hull ID	***2801***	***2802***	***2803***	***2804***	***1905***	***1907***
LOA	8.8 meters	8.8 meters	8.8 meters	8.8 meters	5.7 meters	5.7 meters
Draft	1.1 meters	1.1 meters	1.1 meters	1.1 meters	0.35 meters	0.35 meters

Table 4: Vessels Used

Figure 5: NOAA Ship Rainier near Kalsin Bay with survey launches 2803 and 2802 in view.

B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

Manufacturer	Model	Type
Applanix	POS M/V v5	Positioning and Attitude System
Reson	SeaBat 7125 SV2	MBES
Reson	SeaBat 7125-B	MBES
Reson	SVP71	Sound Speed System
Sea-Bird Electronics	SBE 19plus SEACAT Profiler	Conductivity, Temperature, and Depth Sensor

Table 5: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Crosslines acquired for this survey totaled 4.00% of mainscheme acquisition.

Multibeam crosslines were acquired using Rainier launches 2803 and 2804 across all depth ranges, water masses and boat days that were practical; they are adequate for verifying and evaluating the internal consistency of survey data. A 4-meter CUBE surface was created using only H12999 mainscheme lines, and a second 4-meter surface was created using only crosslines. A difference surface was then generated in Caris from which statistics were derived. For its respective depths, the difference surface was compared to IHO allowable Total Vertical Uncertainty (TVU) standards. In total, 99.98% of the depth differences between H12999 mainscheme and crossline data met HSSD TVU standards. The analysis was performed on H12999 MBES data reduced to Mean Lower-Low Water (MLLW) using Ellipsoidally Referenced Zoned Tides (ERZT) methods.

Depth range	IHO Order	Number of nodes	Nodes satisfying IHO accuracy	Percent nodes satisfying IHO accuracy
Less than 100m	Order 1	276,547	276,544	99.999%
Greater than 100m	Order 2	67,853	67,815	99.944%
	TOTAL:	344,400	344,359	99.988%

Figure 6: Summary table indicating percentage of difference surface nodes between H12999 mainscheme and crossline data that met HSSD allowable TVU standards.

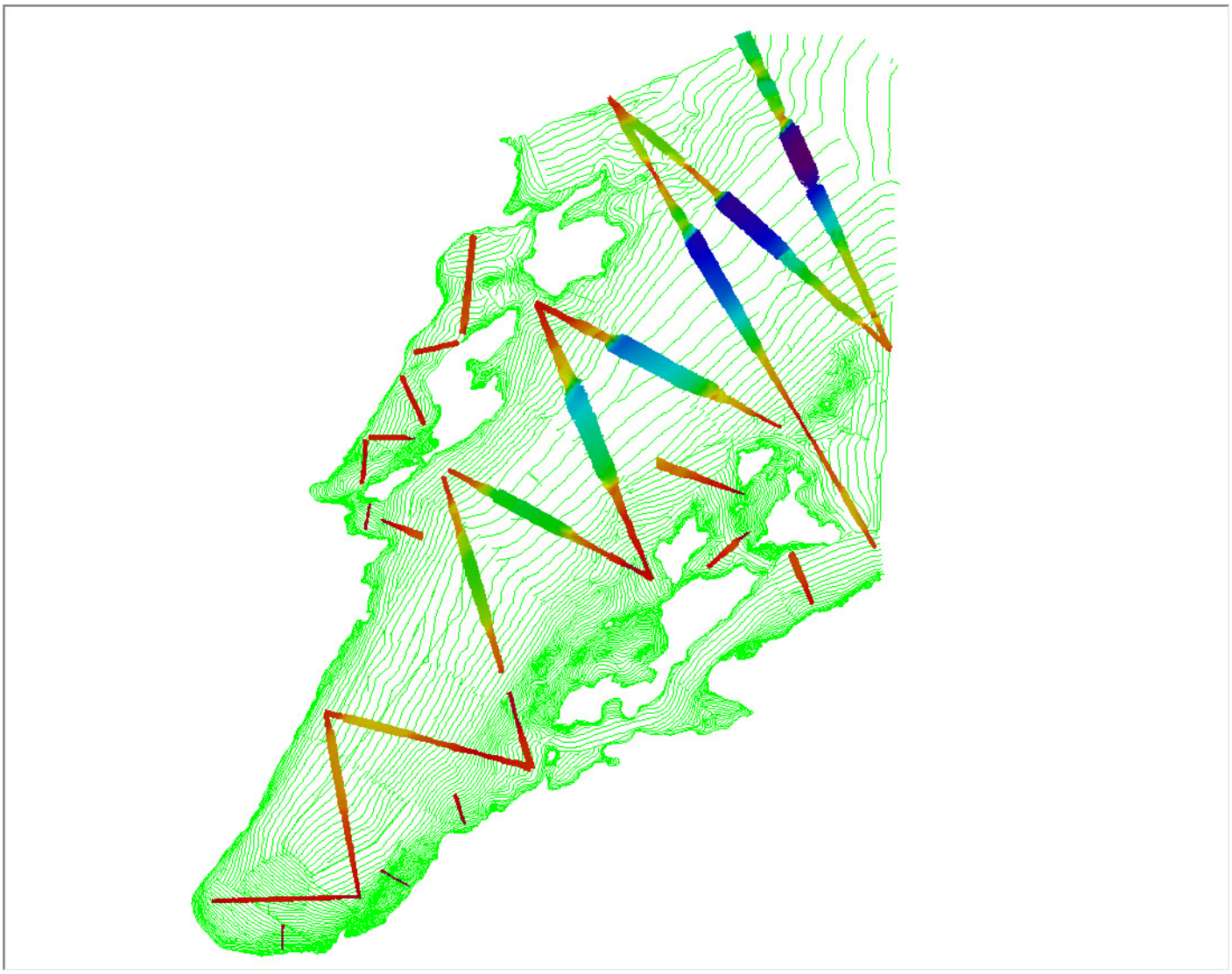


Figure 7: H12999 crossline surface overlaid on mainscheme tracklines showing good temporal and geographic distribution.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning	Method
0 meters	0.0224 meters	ERS via ERZT

Table 6: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Surface
2801, 2802, 2803, 2804	3 meters/second	N/A meters/second	0.15 meters/second

Table 7: Survey Specific Sound Speed TPU Values.

Total Propagated Uncertainty (TPU) values for survey H12999 were derived from a combination of fixed values for equipment and vessel characteristics, as well as from field assigned values for sound speed uncertainties. Tidal uncertainty was accounted for by examining the field generated one thousand-meter resolution separation model and statistically determining a measured value. A measured uncertainty of 0.0224 meters was entered to account for ERZT processing methods. See the 2017 DAPR for further information.

In addition to the usual a priori estimates of uncertainty, some real-time and post-processed uncertainty sources were also incorporated into the depth estimates of this survey. Real-time uncertainties from Reson MBES sonars were recorded and applied during post-processing. Applanix TrueHeave (POS) files, which record estimates of heave uncertainty, were also applied during post-processing. Finally, the post-processed uncertainties associated with vessel roll, pitch, yaw and position were applied in CARIS HIPS using SBET / RMS files generated using POSPac software.

Uncertainty values of submitted finalized grids were calculated in CARIS using "Greater of the Two" of uncertainty and standard deviation (scaled to 95%). Pydro QC tools 2 were used to analyze H12999 TVU compliance; a histogram plot of the results is shown below.

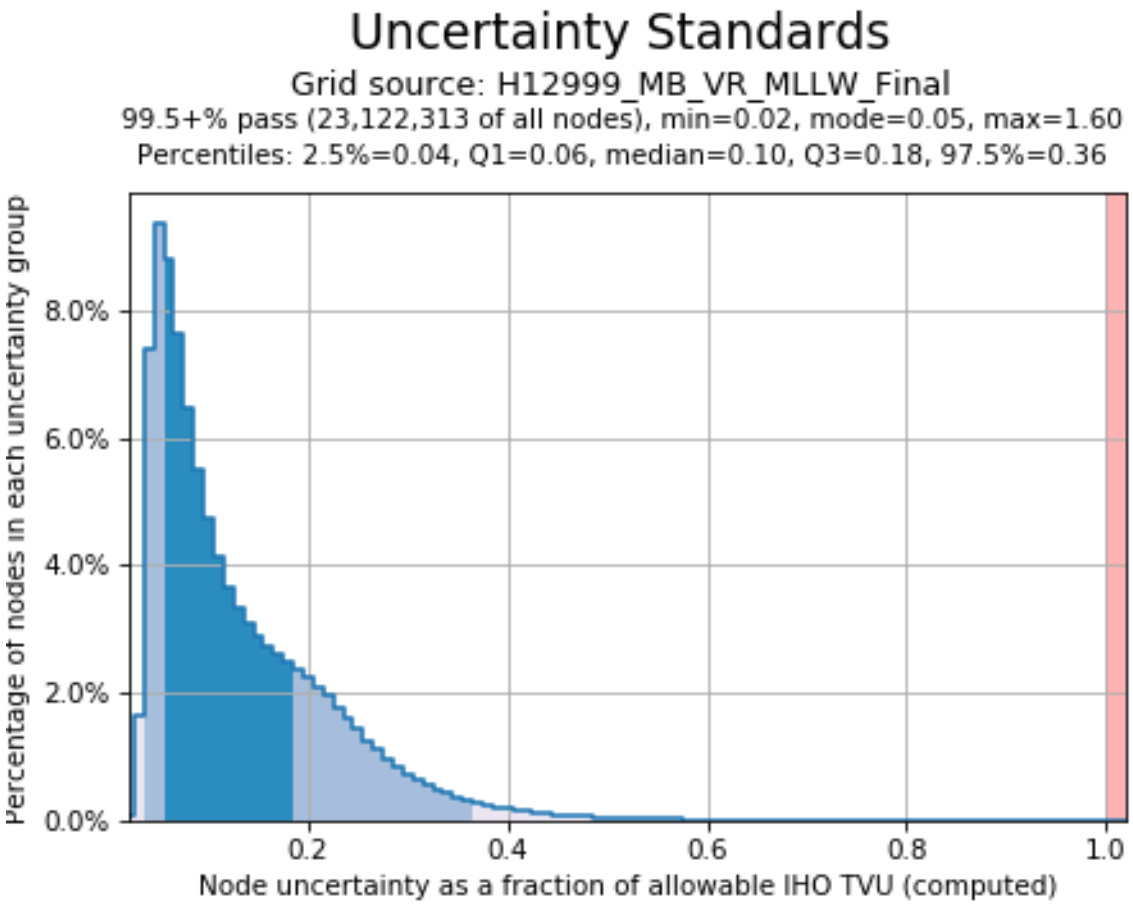


Figure 8: Pydro derived histogram plot showing TVU compliance of H12999 finalized multi-resolution MBES data.

B.2.3 Junctions

Three surveys junction with H12999, two are contemporary and part of project OPR-P136-RA-17, the third was conducted by NOAA Ship Rainier in 1999.

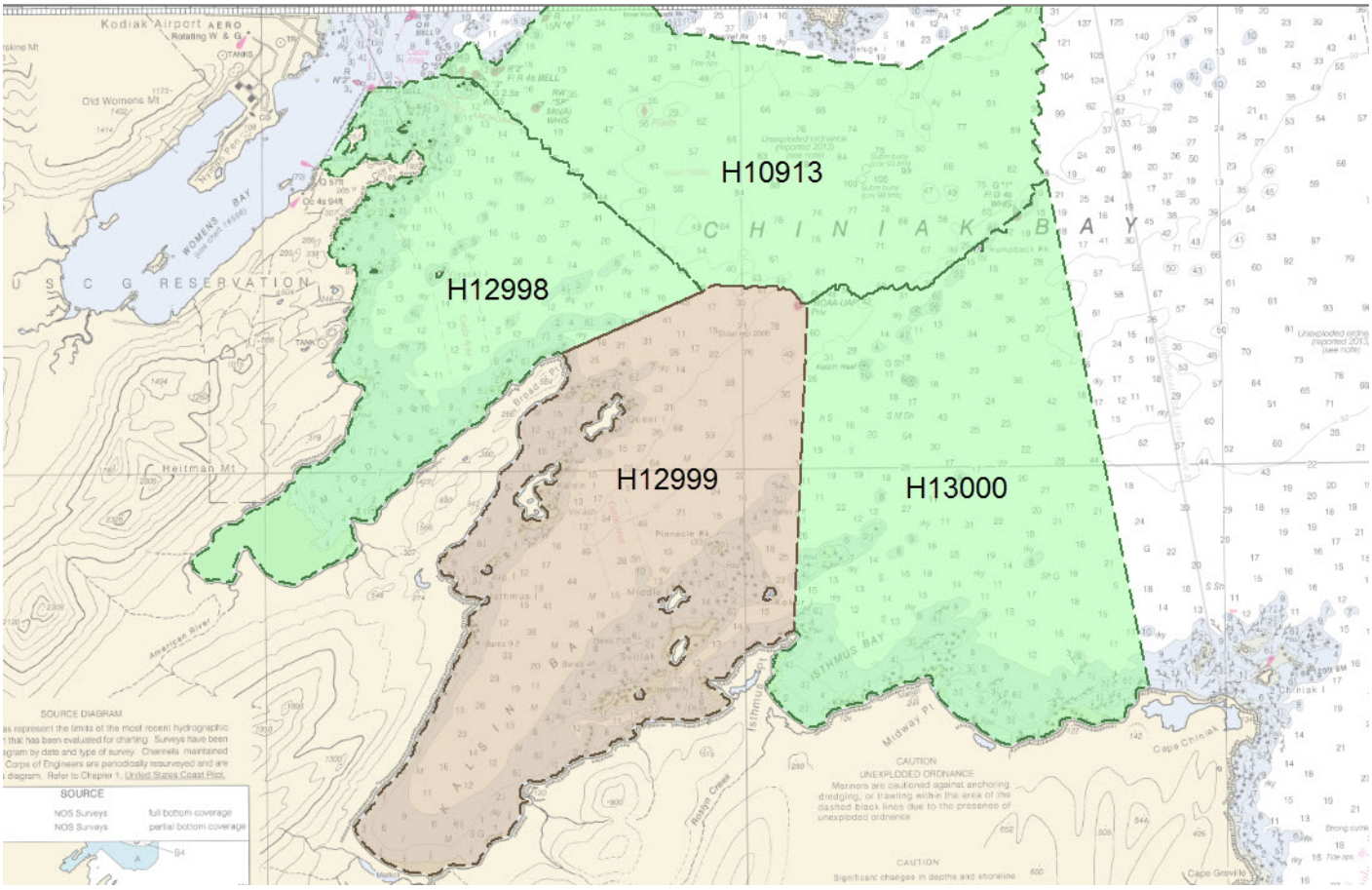


Figure 9: H12999 junction surveys.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12998	1:40000	2017	NOAA Ship RAINIER	NW
H13000	1:40000	2017	NOAA Ship RAINIER	E
H10913	1:10000	1999	NOAA Ship RAINIER	N

Table 8: Junctioning Surveys

H12998

The junction with survey H12998 encompassed 0.29 square nautical miles along the northwestern boundary of H12999. A comparison was made using a difference surface derived from the 4-meter CUBE surfaces of each survey. Analysis of the difference surface indicated that H12999 is an average of 0.10 meters deeper than H12998 with a standard deviation of 0.21 meters. For the respective depths, the difference surface was

compared to the allowable TVU standards specified in the HSSD. In total, 99.85% of the depth differences between H12999 and junction survey H12998 were within allowable uncertainties.

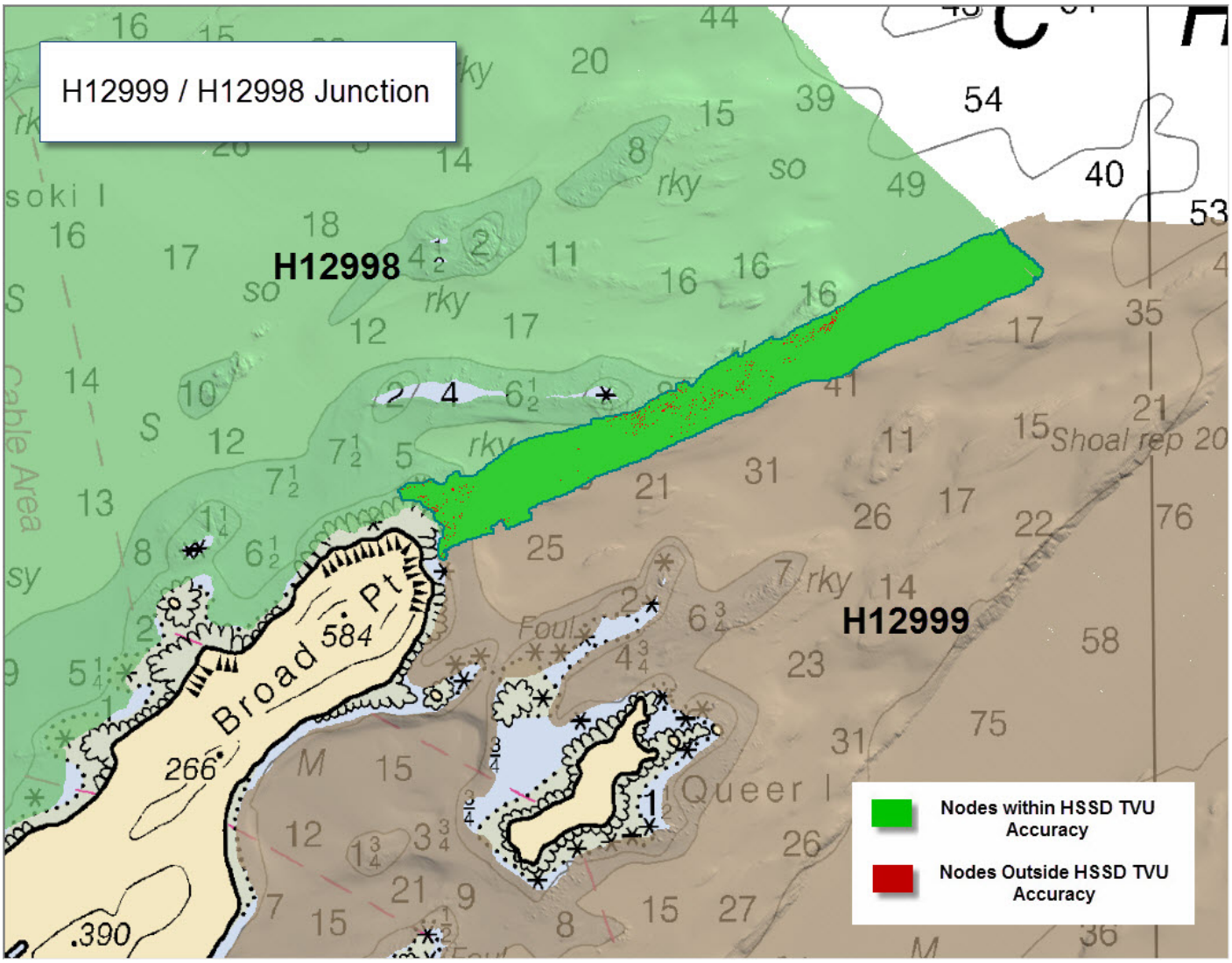


Figure 10: H12999 junction survey H12998 showing HSSD TVU compliance.

Depth range	IHO Order	Number of nodes	Nodes satisfying IHO accuracy	Percent nodes satisfying IHO accuracy
Less than 100m	Order 1	61,636	61,544	99.85%

Figure 11: Summary table indicating percentage of nodes that met HSSD allowable TVU standards for the H12999 / H12998 junction.

H13000

The junction with survey H13000 encompassed 0.44 square nautical miles along the eastern boundary of H12999. A comparison was made using a difference surface derived from the 4-meter CUBE surfaces of each survey. Analysis of the difference surface indicated that H12999 was an average of 0.08 meters deeper than H13000 with a standard deviation of 0.21 meters. For the respective depths, the difference surface was compared to the allowable TVU standards specified in the HSSD. In total, 99.83% of the depth differences between H12999 and junction survey H13000 were within allowable uncertainties.

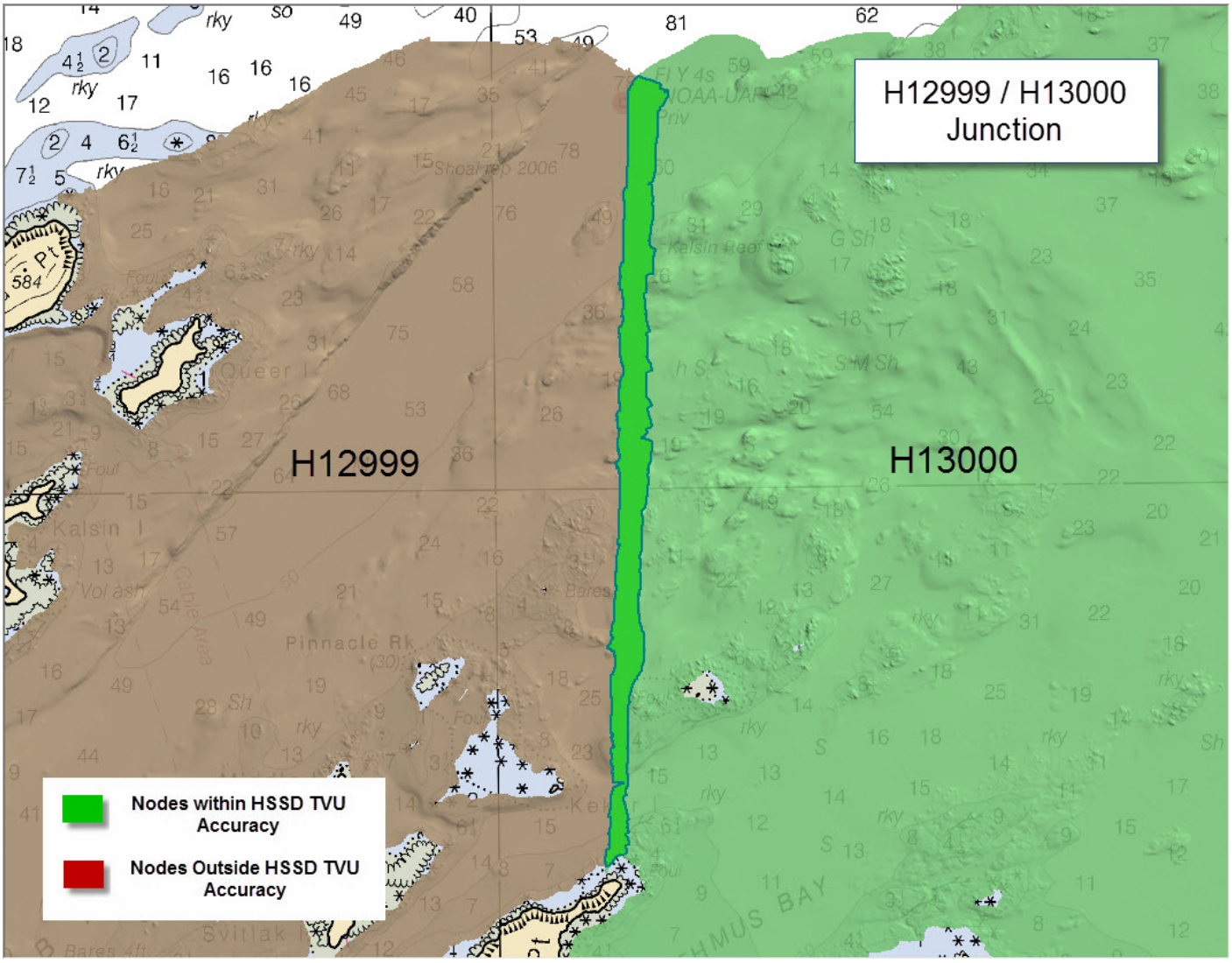


Figure 12: H12999 junction survey H13000 showing HSSD TVU compliance.

Depth range	IHO Order	Number of nodes	Nodes satisfying IHO accuracy	Percent nodes satisfying IHO accuracy
Less than 100m	Order 1	69,604	69,549	99.92%
Greater than 100m	Order 2	24,042	23,934	99.55%
	TOTAL:	93,646	93,483	99.83%

Figure 13: Summary table indicating percentage of nodes that met HSSD allowable TVU standards for the H12999 / H13000 junction.

H10913

The junction with survey H10913 encompassed approximately 0.08 square nautical miles along the northern boundary of H12999. An 8-meter surface of H10913 data was created with Caris Base Editor using the following steps: a point cloud was generated from the H10913.a93 file provided by NOAA's Operations Branch, a Triangulated Irregular Network (TIN) model was created, long edges removed, then used to interpolate the surface. An 8-meter CUBE surface of H12999 data was created in Caris HIPS, then a difference surface was derived between the two. Analysis of the 8-meter difference surface indicated that H12999 is an average of 0.07 meters shoaler than H10913 with a standard deviation of 1.37 meters. H10910 is a 1999 vintage survey, acquired during a time when robust uncertainty calculation and documentation was not standard practice, therefore it was not possible to conduct detailed IHO TVU compliance analysis for this junction. The relatively high standard deviation of the junction data and the larger depth differences seen, are attributed to the comparatively low resolution of the H10913 data set, high seafloor relief in some areas and the lower quality of the surface along some of its edges.

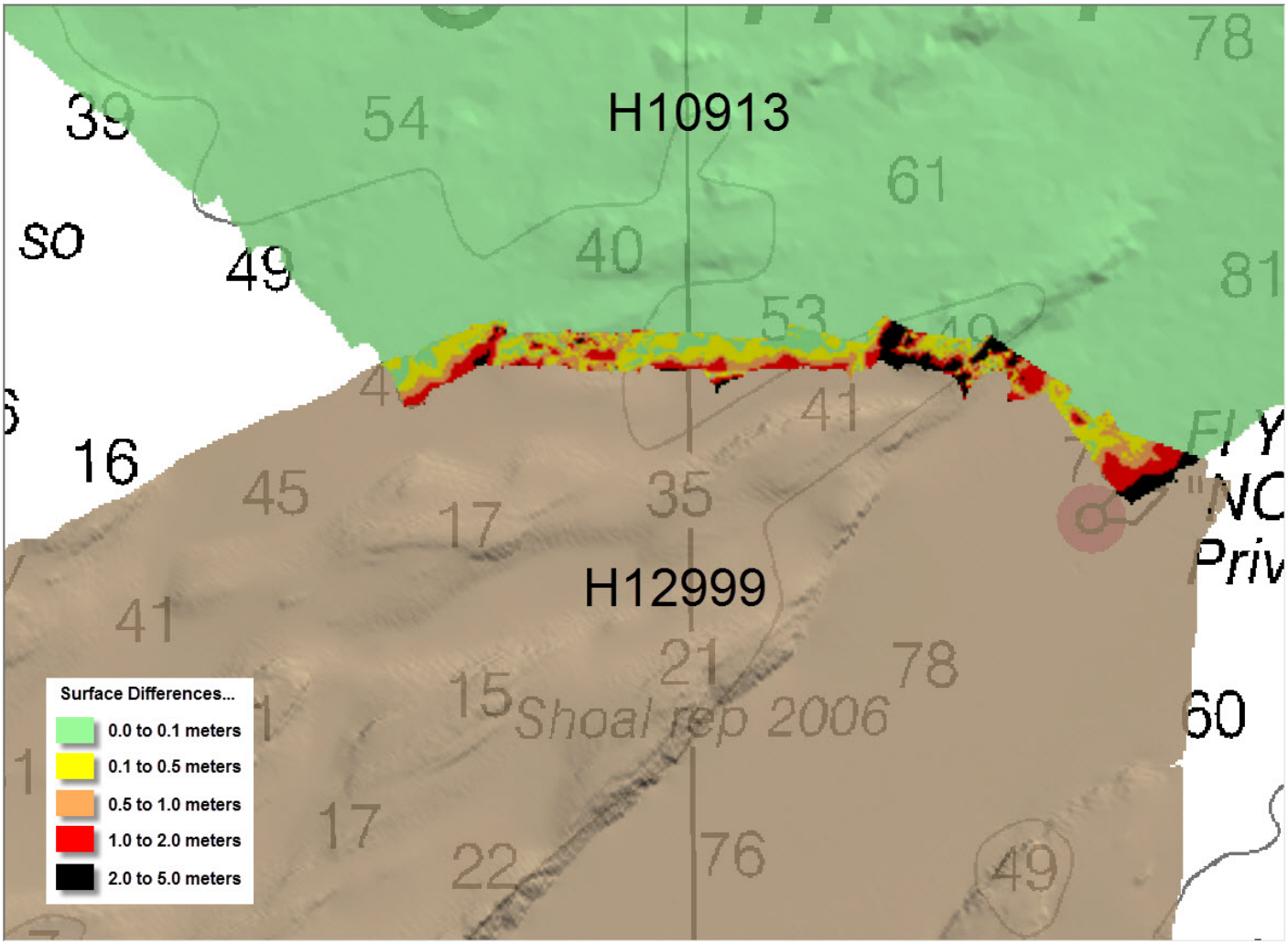


Figure 14: H12999 / H10913 junction.

B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in the quality control section of the DAPR.

B.2.5 Equipment Effectiveness

There were no conditions or deficiencies that affected equipment operational effectiveness.

B.2.6 Factors Affecting Soundings

Mid-Water Column Acoustic Scatter

In some nearshore areas, marine vegetation inhibited accurate bottom detection. In cases where it was possible to discern the true bottom from marine vegetation, the obscuring soundings were rejected. However, when unable to clearly distinguish between the apparent seafloor and vegetation, no soundings were rejected.

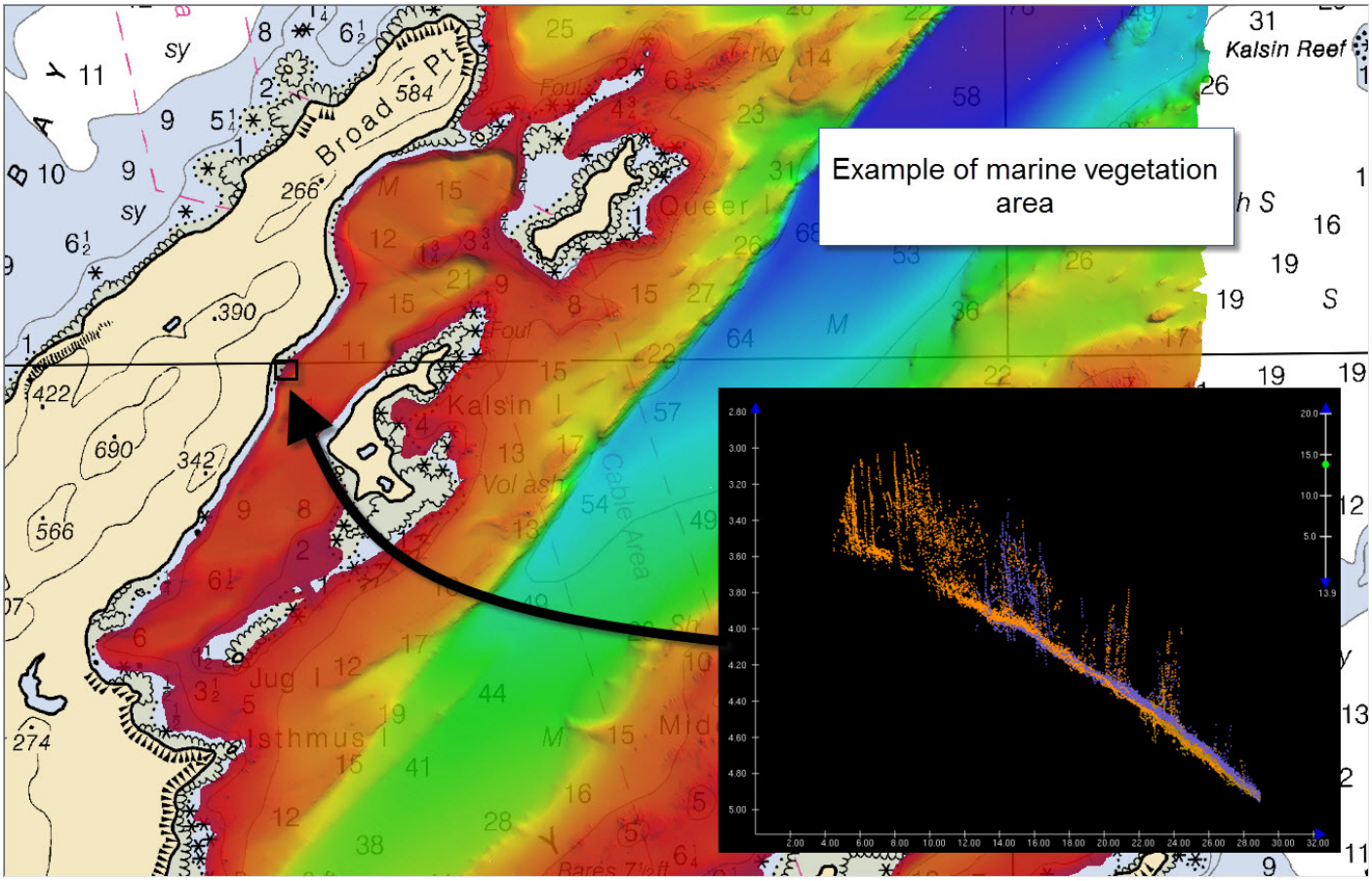


Figure 15: Example of area where marine vegetation may impede accurate seafloor detection.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Seventy four sound speed profiles were acquired for this survey at discrete locations within the survey area at least once every four hours, when significant changes in surface sound speed were observed, or when operating in a new area. Sound speed profiles were acquired using Sea-Bird 19plus SEACAT Profilers. All casts were concatenated into a master file and applied to MBES data using the "Nearest distance within time" (4 hours) profile selection method.

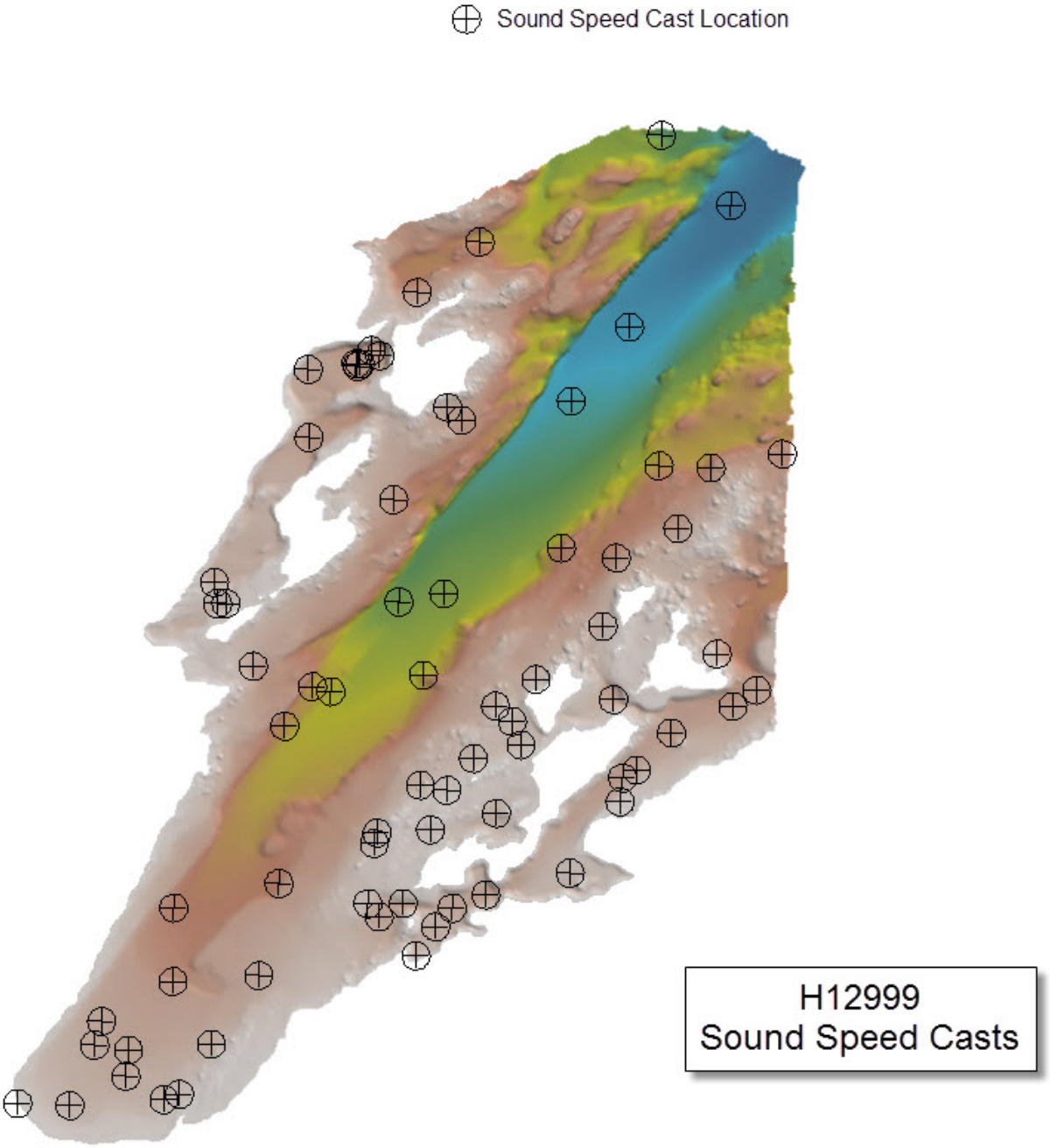


Figure 16: H12999 sound speed cast locations.

B.2.8 Coverage Equipment and Methods

All equipment and survey methods were used as detailed in the DAPR.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

All data reduction procedures conform to those detailed in the DAPR.

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Raw Backscatter data were logged as .7k files for delivery to NOAA's Pacific Hydrographic Branch. Although not required at the time this survey was conducted, backscatter data were processed by the field unit and mosaics generated. One 2-meter resolution mosaic was created for each vessel / frequency, as well as a combined 6-meter resolution mosaic of the entire H12999 survey area.

B.5 Data Processing

B.5.1 Primary Data Processing Software

The following Feature Object Catalog was used: NOAA Extended Attribute Files V_5_5.

B.5.2 Surfaces

The following surfaces and/or BAGs were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H12999_MB_VR_MLLW	CUBE	999 meters	0.12 meters - 144.48 meters	VR	Complete MBES
H12999_MB_VR_MLLW_Final	CUBE	999 meters	0.12 meters - 147.48 meters	VR	Complete MBES

Table 9: Submitted Surfaces

Submitted surfaces were generated using the recommended parameters for depth-based Caris variable resolution bathymetric grids as specified in HSTD 2017-2. The resolution values indicated in Table 9 above are not accurate: the XML-DR schema used to generate this report does not accommodate variable resolution

grids; the 999 value is obviously spurious and was entered merely as a "place holder." The XML-DR team is aware of this issue and are working to update the schema.

A total of thirteen H12999 soundings were designated: eleven as DTONs, and two non-DTON features for inclusion in the H12999_Final_Feature_File.

C. Vertical and Horizontal Control

Additional information discussing the vertical or horizontal control for this survey can be found in the accompanying HVCR.

C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

Traditional Methods Used:

TCARI

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

Station Name	Station ID
Kodiak Island, Womens Bay	9457292

Table 10: NWLON Tide Stations

File Name	Status
H12999_TCARI_Features.tid	Final Approved

Table 11: Water Level Files (.tid)

File Name	Status
P136RA2017.tc	Final

Table 12: Tide Correctors (.zdf or .tc)

A request for final approved tides was sent to N/OPS1 on 07/02/2017. The final tide note was received on 07/18/2017.

H12999 shoreline features were tide corrected using a .tid file created in Pydro utilizing the "TCARI TID file via S-57" function then loaded in Caris Notebook. H12999 MBES data were reduced to MLLW using ERZT processing methods.

ERS Methods Used:

ERS via ERZT

Ellipsoid to Chart Datum Separation File:

H12999_NAD83_MLLW_SEP_1000m.csar

Ellipsoidally Referenced Zoned Tides (ERZT) methods were used to transform between the ellipsoid and water level data. A 1000-meter resolution separation model was computed between the ellipsoid and MLLW using real-time position measurements observed during the survey relative to the vessel water line and the TCARI tide file. "GPS tides" were then computed using the above separation model and the corrected GPS-height-to water-level data (SBET). The 1000-meter resolution separation model was generated in NAD83 as were the SBETs. Refer to the Rainier 2017 DAPR for additional imformation.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83).

The projection used for this project is Universal Transverse Mercator (UTM) Zone 5 North.

The following PPK methods were used for horizontal control:

Single Base

The Wide Area Augmentation System (WAAS) was used for real-time horizontal control for this survey.

The following user installed stations were used for horizontal control:

HVCR Site ID	Base Station ID
9715	Woody

Table 13: User Installed Base Stations

D. Results and Recommendations

D.1 Chart Comparison

A comparison was made between H12999 survey data and Electronic Navigation Charts (ENC) US4AK5OM and US4AK5PM using CUBE surfaces, selected soundings and contours created in Caris.

D.1.1 Electronic Navigational Charts

The following are the largest scale ENCs, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US4AK5OM	1:80000	4	10/05/2015	10/05/2015	NO
US4AK5PM	1:80000	11	04/28/2017	07/30/2017	NO

Table 14: Largest Scale ENCs

US4AK5OM

H12999 survey data coincide with sections of ENC US4AK5OM and US4AK5PM. A positional offset between the two ENCs of approximately 20-70 meters was identified at the junction of these charts at the north end of the H12999 survey area (Figure 16).

A comparison was made between H12999 derived contours and ENC US4AK5OM with the following results: Except as noted below, H12999 3-fathom and 10-fathom contours were generally inshore of the ENC positions; the H12999 50-fathom contour showed good general agreement with the ENC (Figure 17).

In the Svitlak Island area, H12999 data identified many inconsistencies with the chart including a 3-meter shoal, located on the charted 5-fathom ENC contour, approximately 1600 meters west of Utesistoi Island. The area southwest of Svitlak Island is a complex mix of shoals, foul ground and ledges; the ENC requires significant revision in that region (Figure 18).

Eleven Dangers to Navigation (DTON) were identified in the H12999 survey area and submitted to Marine Chart Division's (MCD) Nautical Data Branch. Refer to the H12999_DTON_Report for location and description of these dangers.

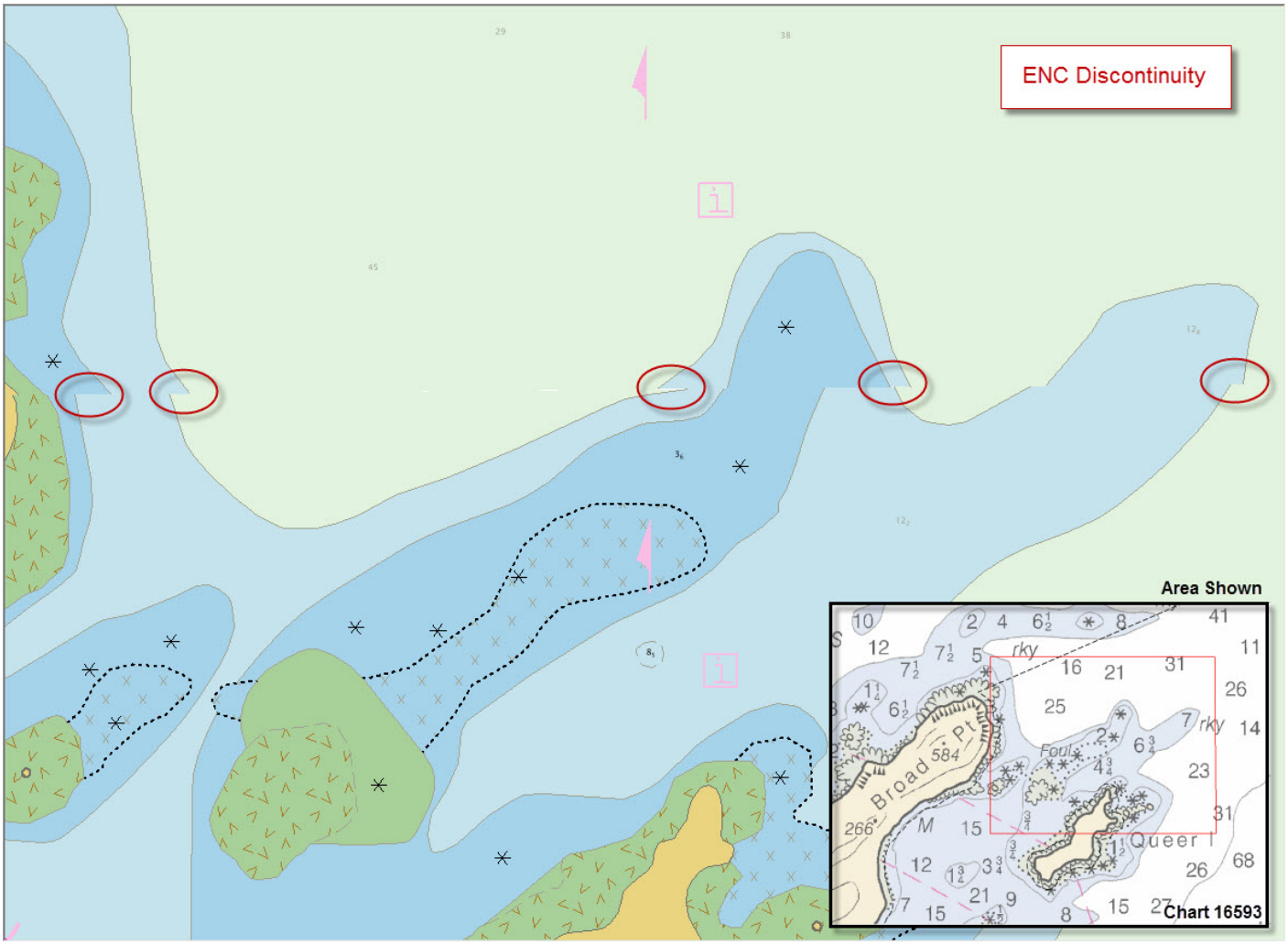


Figure 17: ENC Discontinuity. Red circles identify areas with positional offsets between ENCs of approximately 20 to 70 meters within the H12999 survey area.

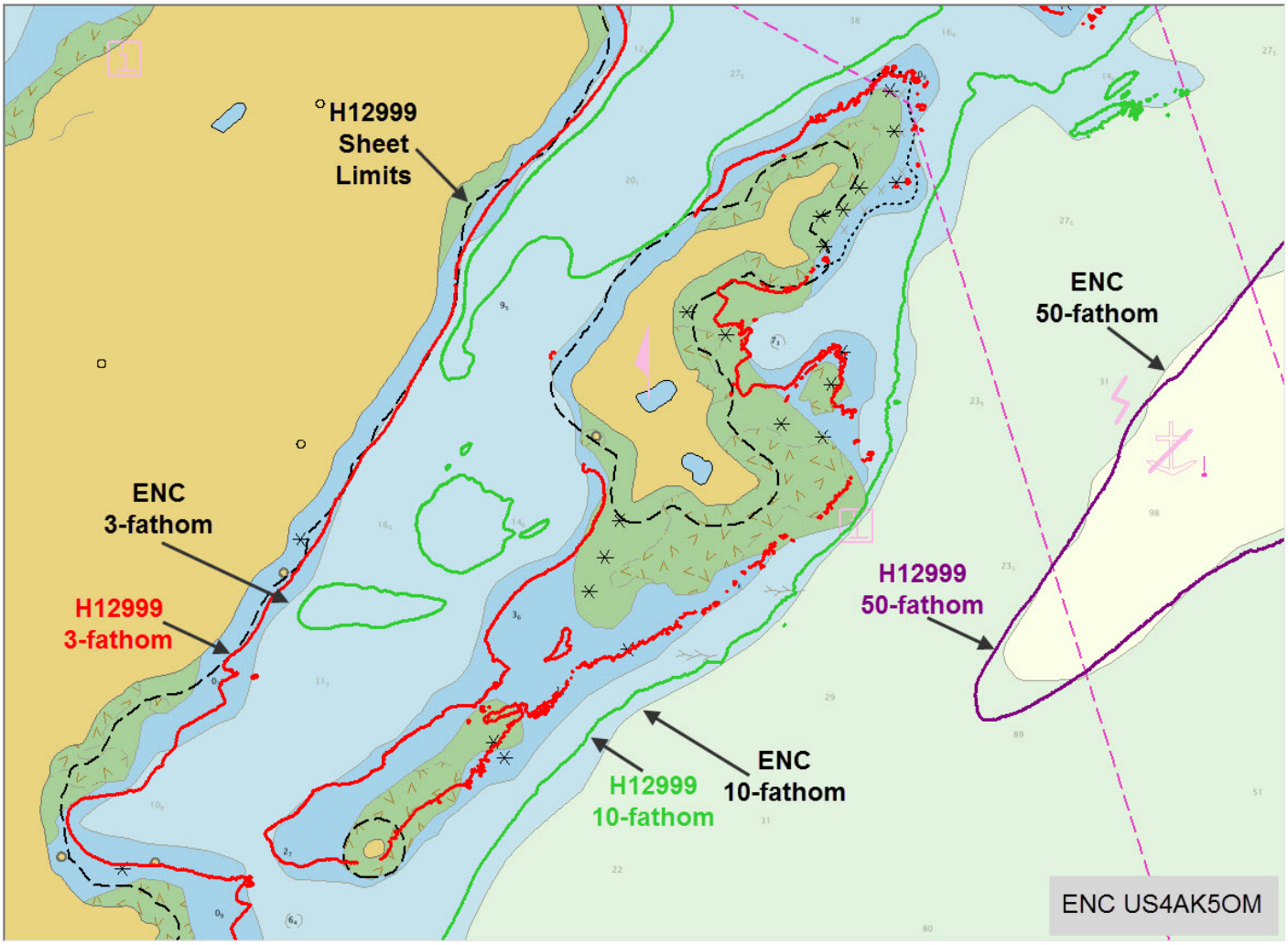


Figure 18: ENC US4AK5OM overlaid with H12999 derived contours.

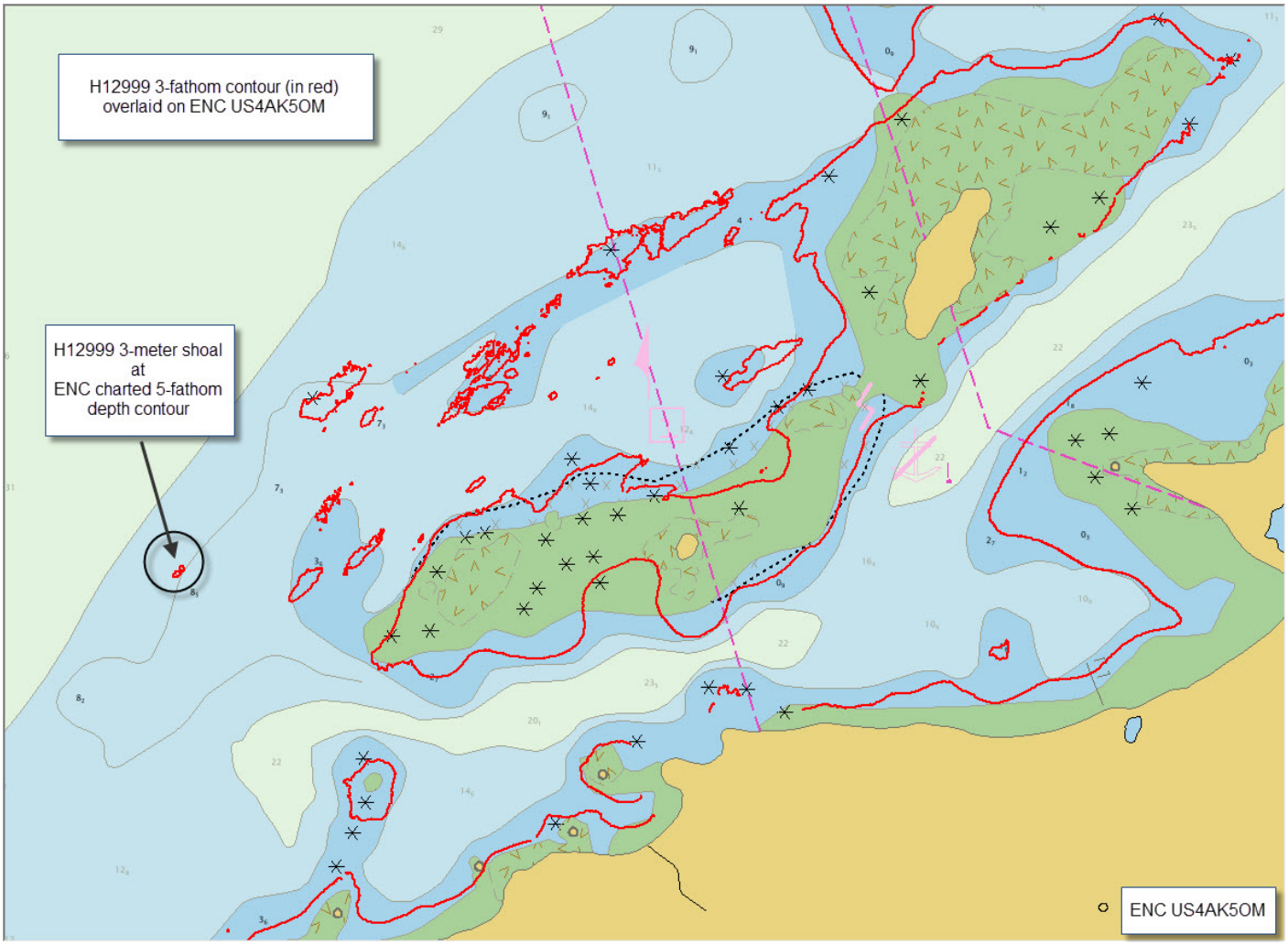


Figure 19: H12999 3-fathom contours (in red) overlaid on ENC US4AK5OM showing numerous discrepancies between survey data and the chart.

US4AK5PM

ENC US4AK5PM covers the northern-most nautical mile of H12999 data. The survey derived 3-fathom and 10-fathom contours were found to be inshore of the ENC charted positions; the H12999 50-fathom contour showed good general agreement with the ENC. Overall, H12999 soundings were deeper than charted depths.

D.1.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.3 Charted Features

H12999 MBES data identified a least depth of 16-fathoms over a shoal reported in 2006.

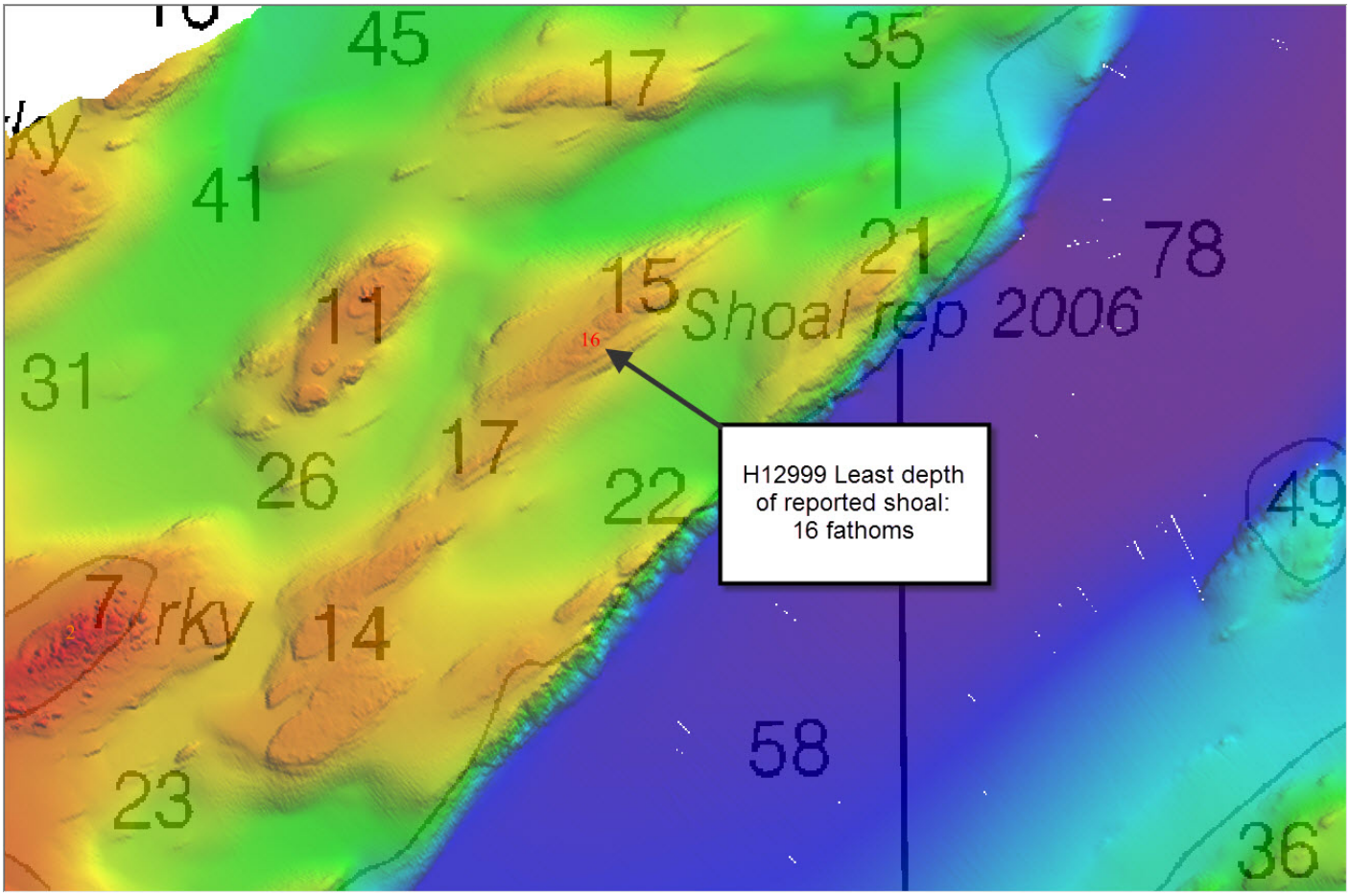


Figure 20: H12999 MBES data overlaid on Chart 16593 showing least depth on shoal reported in 2006.

D.1.4 Uncharted Features

No new navigationally significant features were detected that were not included in the H12999 Final Feature File or elsewhere in this report.

D.1.5 Dangers to Navigation

The following DTON reports were submitted:

DTON Report Name	Date Submitted
H12999_DTON_Report	2017-08-05

Table 15: DTON Reports

Eleven dangers to navigation were identified in the survey area and submitted in one report. The H12999 Danger to Navigation Report is included in Appendix II of this Descriptive Report.

One additional DTON was identified and submitted for charting during office review.

D.1.6 Shoal and Hazardous Features

Features of navigational significance are discussed in the chart comparison sections above or are included in the H12999 Final Feature File submitted with this report.

D.1.7 Channels

No channels exist for this survey. There are no designated anchorages, precautionary areas, safety fairways, traffic separation schemes, pilot boarding areas, or channel and range lines within the survey limits.

D.1.8 Bottom Samples

Six bottom samples were investigated for this survey; the results are included in the H12999 Final Feature File submitted with this report.

D.2 Additional Results

D.2.1 Shoreline

Limited shoreline verification was conducted in accordance with applicable sections of NOAA HSSD and FPM using the Project Reference File (PRF) and Composite Source File (CSF) provided with the Project Instructions. In the field, all assigned features that were safe to approach, were addressed as required with S-57 attribution and recorded in the H12999_Final_Feature_File (FFF) to best represent the features at chart scale. This file also includes new features found in the field as well as recommendations to update, retain or delete assigned features.

D.2.2 Prior Surveys

No prior survey comparisons were provided for this survey.

D.2.3 Aids to Navigation

No ATONs were specifically assigned for this survey and none exist within the assigned sheet limits. The "NOAA-UAF" FL Y 4s Private buoy charted at the northeast corner of the H12999 survey area was not observed in the field. The charted Marker at the head of Kalsin Bay was not seen.

D.2.4 Overhead Features

No overhead features were observed within the H12999 survey area.

D.2.5 Submarine Features

A charted (16593) cable area extends through the H12999 survey area from Broad Point to Isthmus Point; no evidence of cables were identified in H12999 MBES data.

D.2.6 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.7 Platforms

There are no platforms within the H12999 survey area.

D.2.8 Significant Features

There are no significant features in the H12999 survey area that were not discussed elsewhere in this report.

D.2.9 Construction and Dredging

No present or planned construction or dredging are known to exist within the survey limits.

D.2.10 New Survey Recommendation

No new surveys or further investigations are recommended for this area.

D.2.11 Inset Recommendation

No new insets are recommended for this area.

E. Approval Sheet

As Chief of Party, field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Field Procedures Manual, Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

Approver Name	Approver Title	Approval Date	Signature
John J. Lomnicky, CDR/NOAA	Commanding Officer, NOAA Ship Rainier	10/02/2017	Digitally signed by EVANS.BENJAMIN.K.1237217094 Date: 2017.10.09 21:52:45 -07'00'
Steven Loy, LT/NOAA	Field Operations Officer, NOAA Ship Rainier	10/02/2017	BROO.SCOTT.EDWARD.1396599976 c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=NOAA, cn=BROO.SCOTT.EDWARD.1396599976 2017.10.02 12:59:48 -07'00'
James B. Jacobson	Chief Survey Technician, NOAA Ship Rainier	10/02/2017	JACOBSON.JAMES.BRYAN.1269664017 I have reviewed this document 2017.10.02 11:20:03 -07'00'
B.D. Jackson	Senior Survey Technician, NOAA Ship Rainier	10/02/2017	B Jackson

F. Table of Acronyms

Acronym	Definition
AHB	Atlantic Hydrographic Branch
AST	Assistant Survey Technician
ATON	Aid to Navigation
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
BASE	Bathymetry Associated with Statistical Error
CO	Commanding Officer
CO-OPS	Center for Operational Products and Services
CORS	Continually Operating Reference Staiton
CTD	Conductivity Temperature Depth
CEF	Chart Evaluation File
CSF	Composite Source File
CST	Chief Survey Technician
CUBE	Combined Uncertainty and Bathymetry Estimator
DAPR	Data Acquisition and Processing Report
DGPS	Differential Global Positioning System
DP	Detached Position
DR	Descriptive Report
DTON	Danger to Navigation
ENC	Electronic Navigational Chart
ERS	Ellipsoidal Referenced Survey
ERZT	Ellipsoidally Referenced Zoned Tides
FFF	Final Feature File
FOO	Field Operations Officer
FPM	Field Procedures Manual
GAMS	GPS Azimuth Measurement Subsystem
GC	Geographic Cell
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
HSD	Hydrographic Surveys Division
HSSD	Hydrographic Survey Specifications and Deliverables

Acronym	Definition
HSTP	Hydrographic Systems Technology Programs
HSX	Hypack Hysweep File Format
HTD	Hydrographic Surveys Technical Directive
HVCR	Horizontal and Vertical Control Report
HVF	HIPS Vessel File
IHO	International Hydrographic Organization
IMU	Inertial Motion Unit
ITRF	International Terrestrial Reference Frame
LNM	Local Notice to Mariners
LNM	Linear Nautical Miles
MCD	Marine Chart Division
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD 83	North American Datum of 1983
NAIP	National Agriculture and Imagery Program
NALL	Navigable Area Limit Line
NM	Notice to Mariners
NMEA	National Marine Electronics Association
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NRT	Navigation Response Team
NSD	Navigation Services Division
OCS	Office of Coast Survey
OMAO	Office of Marine and Aviation Operations (NOAA)
OPS	Operations Branch
MBES	Multibeam Echosounder
NWLON	National Water Level Observation Network
PDBS	Phase Differencing Bathymetric Sonar
PHB	Pacific Hydrographic Branch
POS/MV	Position and Orientation System for Marine Vessels
PPK	Post Processed Kinematic
PPP	Precise Point Positioning
PPS	Pulse per second

Acronym	Definition
PRF	Project Reference File
PS	Physical Scientist
PST	Physical Science Technician
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPE	Total Propagated Error
TPU	Topside Processing Unit
USACE	United States Army Corps of Engineers
USCG	United Stated Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDA	Global Positiong System timing message
ZDF	Zone Definition File

UNITED STATES DEPARMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910

PROVISIONAL TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : July 11th, 2017

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P136-RA-2017
HYDROGRAPHIC SHEET: H12999
LOCALITY: Kalsin Bay, Kodiak Island, AK
TIME PERIOD: May 12 - June 30, 2017

TIDE STATION USED: 945-7292 Kodiak Island, AK
Lat. 57° 43.8'N Long. 152° 30.8' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.400 meters

REMARKS: RECOMMENDED GRID Please use the TCARI grid "P136RA2017.tc" as the final grid for project OPR-P136-RA-2017, H12999, during the period between May 12th and June 30th, 2017.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units(meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

Note 2: Annual leveling for Kodiak Island, AK (9457292) was not completed in FY17. A review of the verified leveling records from May 2006 - May 2016 shows the tide station benchmark network to be stable within an allowable 0.009 m tolerance. This Tide Note may be used as final stability verification for survey OPR-P136-RA-2017, H12999. CO-OPS will immediately provide a revised Tide Note should subsequent leveling records indicate any benchmark network stability movement beyond the allowable 0.009 m tolerance.

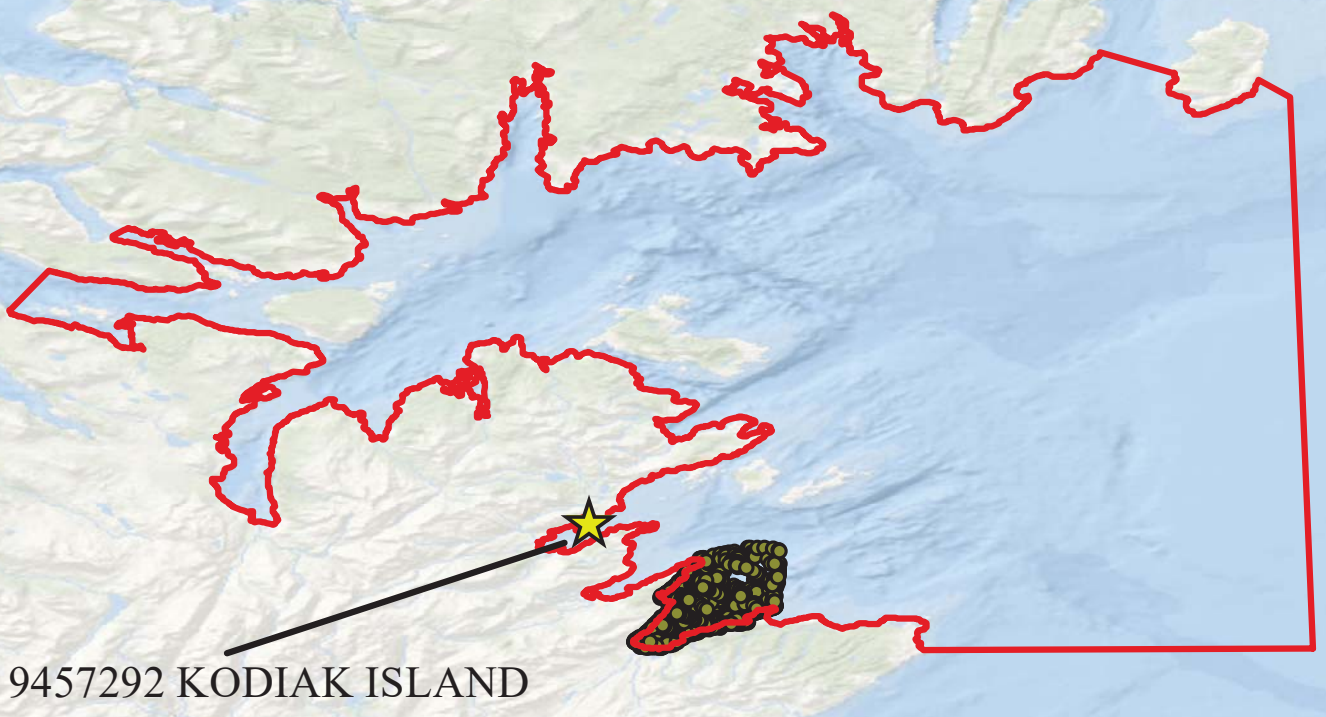
Note 3: Due to inaccurate shoreline around Middle Bay, AK, survey track lines fall outside of the TCARI grid boundaries in some areas. TCARI will extrapolate the tide corrector to cover these soundings

HOVIS.GERALD.THOMAS.JR.1365860250

Digitally signed by HOVIS.GERALD.THOMAS.JR.1365860250
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=HOVIS.GERALD.THOMAS.JR.1365860250
Date: 2017.07.18 09:36:38 -04'00'

CHIEF, PRODUCTS AND SERVICES BRANCH

Preliminary as Final TCARI Grid for:
OPR-P136-RA-2017, H12999
Kalsin Bay, Kodiak Island, AK



Jessica Murphy - NOAA Federal <jessica.murphy@noaa.gov>

H12999 DtoN Submission to NDB

2 messages

Jessica Murphy - NOAA Federal <jessica.murphy@noaa.gov> Thu, Jan 25, 2018 at 8:45 AM
To: OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov>
Cc: Olivia Hauser - NOAA Federal <olivia.hauser@noaa.gov>, Grant Froelich - NOAA Federal <grant.froelich@noaa.gov>, Timothy Wilkinson - NOAA Federal <timothy.wilkinson@noaa.gov>

Please find the attached zip file associated with survey H12999 for submission to Nautical Data Branch (NDB) and Marine Chart Division (MCD). This danger submission contains one sounding for chart application.

The information attached originates from the NOAA Ship Rainier, and was submitted to the Pacific Hydrographic Branch (PHB) for review and processing during the Survey Acceptance Review (SAR). The contents of the attached WinZip file was generated at PHB. The attached zip file contains a DtoNLetter (PDF), associated image files, and a Pydro XML file.

If you have any questions, please direct them back to me via email or phone.

Thank you for your assistance.

Jessica

--
Jessica Ramsay Murphy
NOAA's National Ocean Service
Office of Coast Survey
Pacific Hydrographic Branch
7600 Sand Point Way N.E.
Seattle, WA 98115-6349
206-526-6854

H12999_DTON_Office_new.zip
2877K

OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov> Fri, Jan 26, 2018 at 5:17 AM
To: Jessica Murphy - NOAA Federal <jessica.murphy@noaa.gov>
Cc: Olivia Hauser - NOAA Federal <olivia.hauser@noaa.gov>, Grant Froelich - NOAA Federal <grant.froelich@noaa.gov>, Timothy Wilkinson - NOAA Federal <timothy.wilkinson@noaa.gov>, _NOS OCS PBA Branch <ocs.pba@noaa.gov>, _NOS OCS PBB Branch <ocs.pbb@noaa.gov>, _NOS OCS PBC Branch <ocs.pbc@noaa.gov>, _NOS OCS PBD Branch <ocs.pbd@noaa.gov>, _NOS OCS PBE Branch <ocs.pbe@noaa.gov>, _NOS OCS PBG Branch <ocs.pbg@noaa.gov>, Castle E Parker <Castle.E.Parker@noaa.gov>, Charles Porter - NOAA Federal <charles.porter@noaa.gov>, James M Crocker <James.M.Crocker@noaa.gov>, Ken Forster <Ken.Forster@noaa.gov>, Kevin Jett - NOAA Federal <kevin.jett@noaa.gov>, Matt Kroll <Matt.Kroll@noaa.gov>, Michael Gaeta <Michael.Gaeta@noaa.gov>, Nautical Data Branch <OCS.NDB@noaa.gov>, NSD Coast Pilot <coast.pilot@noaa.gov>, PHB Chief <PHB.Chief@noaa.gov>, Tara Wallace <Tara.Wallace@noaa.gov>, Chris Libeau <Chris.Libeau@noaa.gov>

DD-29176 has been registered by the Nautical Data Branch and directed to Products Branch A for processing.

The DtoN reported is a shoal located in Kalsin Bay, AK.

The following charts are affected:

16593 kapp 2552

16580 kapp 2546

The following ENCs are affected:

US4AK5OM

US3AK5KM

References:

H12999

OPR-P136-RA-17

This information was discovered by PHB during Survey Acceptance Review (SAR).

Nautical Data Branch/Marine Chart Division/
Office of Coast Survey/National Ocean Service/
Contact: ocs.ndb@noaa.gov

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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H12999_DTON_Office_new.zip
2877K

APPROVAL PAGE

H12999

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NCEI for archive

- Descriptive Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Collection of backscatter mosaics
- Processed survey data and records
- Bottom samples
- GeoPDF of survey products

The survey evaluation and verification has been conducted according current OCS Specifications, and the survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: Digitally signed by Peter Holmberg
Reason: I am approving this document
Date: 2018.10.03 12:56:22 -07'00'

Pete Holmberg
Acting Chief, Pacific Hydrographic Branch